DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee. Authorization for this examiner's amendment was given in a telephone interview with Gregory Thorne on 7/15/2010.

Please amend the claims as follows:

1. (Currently amended) A method for visualization of a 3-dimensional (3-D) image, the method comprising acts of:

converting a 3-D scene model into a plurality of 3-D scene points;

providing at least one of the plurality of 3-D scene points to visualize on a 3-D display plane comprising a plurality of 3-D pixels that are organized in rows and columns and are directionally modulated;

calculating for each of the plurality of 3-D pixels a contribution of light from the plurality of 3-D pixels to generate at least a part of one 3-D scene point of the plurality of 3-D scene points; and

performing at least one of emitting and transmitting the calculated contribution of the light by each of one or more first 3-D pixels to generate at least part of the one 3-D scene point,

wherein the contribution of light to a certain 3-D scene point is calculated including a luminance value and a transformed depth within one first 3-D pixel of a row or column prior to the visualization of the certain 3-D scene point for all first 3-D pixels of the row or column that receive the certain 3-D scene point, respectively, and

wherein the one first 3-D pixel acts as a master pixel for the row or column, while each remaining one or more first 3-D pixels of the row or column act as slave pixels, the slave pixels receive the calculated contribution of the light of the certain 3-D scene point from the master pixel including the luminance value and the transformed depth; and

wherein rendering is performed within each 3-D pixel using the luminance value and the transformed depth to produce an auto-stereoscopic display.

2. (Previously presented) The method according to claim 1, wherein light is emitted and/or transmitted by 2-D pixels comprised within the 3-D pixels, each 2-D pixel directing light into a different direction contributing light to a scene point of the 3-D scene model.

3. (Previously presented) The method according to claim 1, wherein the 3-D scene points are provided sequentially, or in parallel, to the 3-D pixels.

4. (Previously presented) The method according to claim 1, wherein the calculation of the contribution of light of a 3-D pixel to a certain 3-D scene point is made previous to the provision of the 3-D scene points to the 3-D pixels.

5. (Canceled)

6. (Canceled)

7. (Previously presented) The method according to claim 1, further comprising an act of a slave 3-D pixel altering the co-ordinates of a 3-D scene point prior to putting out the altered 3-D scene point from the slave 3-D pixel to at least one neighboring slave 3- D pixel.

8. (Previously presented) The method according to claim 1, wherein if more than one 3-D scene point needs the contribution of light from one 3-D pixel, the depth information of the 3-D scene point is decisive.

9. (Previously presented) The method according to claim 1, wherein 2-D pixels of the 3-D display plane transmit and/or emit light only within one plane.

10. (Previously presented) The method according to claim 1, wherein color is incorporated by spatial or temporal multiplexing within each 3-D pixel.

11. (Currently amended) A 3-D display device, comprising:

a 3-D display plane having a plurality of 3-D pixels, said plurality of 3-D pixels comprise an input port and an output port for receiving and putting out 3-D scene points of a 3-D scene, one or more of the plurality of 3-D pixels organized in rows and columns comprise a control unit located at the one or more 3-D pixels for calculating a contribution including a luminance value and a transformed depth to the visualization of a 3-D scene point representing the 3-D scene by a first 3-D pixel of a row or column and by each 3-D pixel that is a member of the same row or column,

wherein the first 3-D pixel of each row or column acts as a master pixel for that row or column, while other 3-D pixels of that row or column act as slave pixels, the slave 3-D pixels of a row or column receive the calculated contribution including the luminance value and the transformed depth to the visualization of the 3-D scene point from the master pixel; and

wherein rendering is performed within each 3-D pixel using the luminance value and the transformed depth to produce an auto-stereoscopic display on the

3-D display device.

12. (Previously presented) The 3-D display device according to claim 11, wherein the 3-D pixels are interconnected for parallel and serial transmission of 3-D scene points from a 3-D pixel to neighboring 3-D pixels.

13. (Previously presented) The 3-D display device according to claim 11, wherein the 3-D pixels comprise a spatial light modulator with a matrix of 2-D pixels.

14. (Previously presented) The 3-D display device according to claim 13, wherein the 3-D pixels comprise a point light source, providing the 2-D pixel with light.

15. (Previously presented) The 3-D display device according to claim 13, wherein the 3-D pixels comprise registers for storing a value determining which ones of the 2-D pixels within the 3-D pixel contribute light to a 3-D scene point.

16. (Previously presented) The method of claim 1, wherein the calculating of the contribution comprises calculating whether a current 3-D scene point is closer to a viewer than a past 3-D scene point.

17. (Previously presented) The 3-D display device of claim 11, wherein the control unit calculates whether a current 3-D scene point is closer to a viewer

than a past 3-D scene point.

18. (Currently Amended) The method of claim 1, wherein each 3-D scene point has coordinates x, z, y ~~and a luminance value~~.

19. (Currently amended) A method for visualization of a 3-dimensional (3-D) image, the method comprising acts of:

converting a 3-D scene model into a plurality of 3-D scene points;

providing at least one of the plurality of 3-D scene points to visualize on a 3-D display plane comprising a plurality of 3-D pixels that are directionally modulated;

calculating at each of the plurality of 3-D pixels a contribution of light <u>including a luminance value and a transformed depth</u> from that 3- D pixel to generate at least in part a 3-D scene point of the plurality of 3-D scene points; and

performing at least one of emitting and transmitting calculated contribution of the light by each of the plurality of 3-D pixels that is calculated to contribute to the visualization of at least part of the 3-D scene point,

wherein each 3-D pixel alters received transmitted calculated contribution of light of the 3-D scene point prior to putting out the 3-D scene point to at least one neighboring 3-D pixel that receives the altered calculated contribution of light for visualization of the 3-D scene point including the luminance value and the transformed depth and

wherein for each 3-D pixel that receives an altered 3-D scene point, the act of calculating comprises calculating the contribution of light from the that 3-D pixel based on the altered 3-D scene point; and

wherein rendering is performed within each 3-D pixel using the luminance value and the transformed depth to produce an auto-stereoscopic display.

20. (Previously presented) The method of claim 18, wherein the calculated contribution of light for visualization of the 3-D scene point is altered to account for the relative difference in position between the 3-D pixels.

21. (Previously presented) The method of claim 18, wherein the act of calculating is performed without a use of global position information.

Allowable Subject Matter

Claims 1-4 and 7-21 are allowed.

The following is an examiner's statement of reasons for allowance: the cited prior art does not disclose or render obvious the combination of elements recited in the claims as whole. Specifically, the cited prior art fails to disclose or render obvious the following limitations:

As per independent claim 1, the claimed:

wherein the contribution of light to a certain 3-D scene point is calculated including a luminance value and a transformed depth within one first 3-D pixel of a row or column prior to the visualization of the certain 3-D scene point for all first 3-D pixels of the row or column that receive the certain 3-D scene point, respectively, and

wherein the one first 3-D pixel acts as a master pixel for the row or column, while each remaining one or more first 3-D pixels of the row or column act as slave pixels, the slave pixels receive the calculated contribution of the light of the certain 3-D scene point from the master pixel including the luminance value and the transformed depth; and

wherein rendering is performed within each 3-D pixel using the luminance value and the transformed depth to produce an auto-stereoscopic display.

As per independent claim 11, the claimed:

calculating a contribution including a luminance value and a transformed depth to the visualization of a 3-D scene point representing the 3-D scene by a first 3-D pixel of a row or column and by each 3-D pixel that is a member of the same row or column,

wherein the first 3-D pixel of each row or column acts as a master pixel for that row or column, while other 3-D pixels of that row or column act as slave pixels, the slave 3-D pixels of a row or column receive the calculated contribution including the luminance value and the transformed depth to the visualization of the 3-D scene point from the master pixel; and

wherein rendering is performed within each 3-D pixel using the luminance value and the transformed depth to produce an auto-stereoscopic display on the 3-D display device.

As per independent claim 19, this claim is also allowed for the same reasons as independent claim 1.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL F. HAJNIK whose telephone number is (571)272-7642. The examiner can normally be reached on Mon-Fri (8:30A-5:00P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel F Hajnik/
Primary Examiner, Art Unit 2628